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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,153	01/31/2002	Masatoshi Yoshikawa	219054US2SRD	5984
22850	7590	04/13/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.			WATKO, JULIE ANNE	
1940 DUKE STREET			ART UNIT	
ALEXANDRIA, VA 22314			PAPER NUMBER	

2652

DATE MAILED: 04/13/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/059,153

**Applicant(s)**

YOSHIKAWA ET AL.

**Examiner**

Julie Anne Watko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.  
4a) Of the above claim(s) 6-12 and 14-17 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,4,5,13,18,19 and 22-25 is/are rejected.  
7) ☒ Claim(s) 2,3,20 and 21 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 05 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Information Disclosure Statement***

1. The information disclosure statement filed December 5, 2004, has been considered. The reference has been initialed on the (non-1449) list provided by Applicant.

***Drawings***

2. The drawings were received on April 5, 2004. These drawings are acceptable.

***Claim Rejections - 35 USC § 112***

3. Applicant has addressed the indefiniteness rejections in paper no. 8, mailed December 5, 2003.

***Claim Rejections - 35 USC § 102***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1, 4-5, 13, 18-19 and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Trindade (US Pat. No. 6643103 B1).

As recited in independent claim 1, Trindade shows a magnetoresistive head (see Fig. 4), comprising: a magnetoresistive film 220 including first and second (228 and 230) magnetization free layers, an intermediate layer 240 sandwiched between the first and second magnetization free layers, an underlayer ("seed layer (not shown)", see col. 6, lines 1-2) and a protective layer ("capping layer (not shown)", see col. 6, line 6), which are stacked in the order of the underlayer, the first magnetization free layer, the intermediate layer, the second magnetization free layer and the protective layer (see Fig. 6, see also col. 5, line 63-col. 6, line 6) and arranged to be substantially perpendicular to an air-bearing surface ("AIR BEARING", see Figs. 4 and 6), each

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magnetization direction of which first and second magnetization free layers is allowed to vary independently in response to a signal magnetic flux from a medium (“magnetizations of free layers 228 and 230 rotate in the presence of flux from a magnetic medium”, see col. 6, lines 30-31), wherein first and second magnetization free layers produce a magnetoresistance effect in accordance with the magnetization directions thereof (see col. 4, line 58-col. 5, line 2); and a first electrode 252 electrically connected with (insofar as it directly contacts) the underlayer and a second electrode 250 electrically connected with (insofar as it directly contacts) the protective layer, the first and second electrodes allowing a current to flow in a direction substantially perpendicular to the plane (“CPP”, see col. 5, line 3) of the magnetoresistive film.

As recited in independent claim 19, Trindade shows a magnetoresistive head, comprising: a magnetoresistive film 220 including first and second magnetization free layers (228 and 230), an intermediate layer 240 sandwiched between the first and second magnetization free layers, which are stacked in the order (see Fig. 6, see also col. 5, line 63-col. 6, line 6) of the first magnetization free layer, the intermediate layer and the second magnetization free layer and arranged to be substantially perpendicular to an air bearing surface (“AIR BEARING”, see Figs. 4 and 6), each first and second magnetization free layer having a magnetization direction which is allowed to vary independently in response to a signal magnetic flux from a medium (“magnetizations of free layers 228 and 230 rotate in the presence of flux from a magnetic medium”, see col. 6, lines 30-31), wherein the first and second magnetization free layers produce a magnetoresistance effect in accordance with the magnetization directions thereof (see col. 4, line 58-col. 5, line 2); and a first electrode 252 electrically connected with the first magnetization free layer and a second electrode 250 electrically connected with the second magnetization free

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layer, the first and second electrodes allowing a current to flow in a direction substantially perpendicular to the plane ("CPP", see col. 5, line 3) of the magnetoresistive film.

As recited in claims 4 and 22, Trindade shows that the intermediate layer 240 is formed of a conductive nonmagnetic layer ("low resistivity metallic film such as W, Ti, Ta, or AlCu", see col. 5, lines 45-46).

As recited in claims 5 and 23, Trindade shows that the intermediate layer 240 is formed of at least one kind of metal selected from the group consisting of Be, Al ("AlCu", see col. 5, line 46), Mg, Ca, Cu ("AlCu", see col. 5, line 46), Au, Ag, Rh, Ru and Ir.

As recited in claims 13 and 24, Trindade shows a pair of hard biasing films ("PM", see Fig. 7) arranged on the both ends, along a track width direction (left-right direction in Fig. 7), of the magnetoresistive film, including the first magnetization free layer 228, the intermediate layer 240 and the second magnetization free layer 230, and imparting magnetic bias to the first 228 and second 230 magnetization free layers in substantially the same direction (see arrows "M" in Fig. 7).

As recited in claim 25, Trindade shows, in addition to the above teachings, a perpendicular magnetic recording-reproducing apparatus ("In particular, the present invention relates to a spin valve type head for **perpendicular recording**", see col. 1, lines 16-18, emphasis added), comprising: a perpendicular magnetic recording medium 102; and a magnetoresistive head arranged to face the perpendicular magnetic recording medium.

***Allowable Subject Matter***

6. Claims 2-3 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither shows nor suggests the specifically claimed locations for the magnetic shields of Trindade.

***Response to Arguments***

8. Applicant's arguments filed April 5, 2004, have been fully considered but they are not persuasive.

On page 11, 1<sup>st</sup> and 2<sup>nd</sup> full paragraphs, Applicant argues that "The separate spin valves of the dual spin valve head disclosed in Trindade are configured to operate independently. ... In fact, any interaction between the valves degrades performance of the apparatus. ... Thus, Applicants respectfully submit that Trindade does not teach a magnetoresistive film including first and second magnetization free layers, an intermediate layer sandwiched between the first and second magnetization free layers, wherein first and second magnetization free layers produce a magnetoresistance effect in accordance with the magnetization directions thereof, as recited in Claim 1." The Examiner has considered this argument thoroughly and agrees that the separate spin valves of the dual spin valve head disclosed in Trindade are configured to operate independently. This is consistent with Applicant's claimed apparatus, which includes "each first and second magnetization free layer having a magnetization direction which is allowed to vary

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**independently** in response to a signal magnetic flux” as recited in claim 19, lines 6-7 (emphasis added).

In response to applicant's argument that the references fail to show certain features of applicant's apparatus, it is noted that the features upon which applicant relies (i.e., some interaction between the two free layers) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim 1 recites the limitation “wherein first and second magnetization free layers produce a magnetoresistance effect in accordance with the magnetization directions thereof” in lines 8-10. This limitation is met by Trindade insofar as a first magnetization free layer produces a magnetoresistance effect in accordance with its magnetization direction (relative to a magnetization direction of a first pinned layer), and a second magnetization free layer produces a magnetoresistance effect in accordance with its magnetization direction (relative to a magnetization direction of a second pinned layer). Nothing in any claim requires the production of a magnetoresistance effect in accordance with the magnetization directions of the first and second magnetization free layers to be non-independent.

Applicant has failed to distinguish the rejected claims from the reference.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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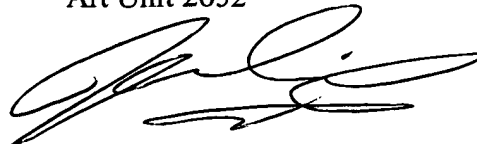
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (703) 305-7742. The examiner can normally be reached on Sat & Mon until 9PM, Wed & Fri until 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Julie Anne Watko  
Primary Examiner  
Art Unit 2652



April 12, 2004  
JAW